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EXAMINER

ALEJANDRO MULERO, LUZ L

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 11/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/769,229	Applicant(s) LAI ET AL.	
	Examiner Luz L. Alejandro	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 37-40 and 53-61 is/are pending in the application.
- 4a) Of the above claim(s) 40 and 58-61 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 37-39 and 53-57 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>0104, 0404</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 37-39 and 53-57, drawn to an apparatus, classified in class 118, subclass 723F1.
- II. Claims 40 and 58-61, drawn to a method, classified in class 438, subclass 510.

The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed can be used to practice another and materially different process such as an ion implantation process or an ion beam etching process.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, above and the search required for Group II is not required for Group I, restriction for examination purposes as indicated is proper.

During a telephone conversation with Patrick M. Boucher on 11/02/05 a provisional election was made without traverse to prosecute the invention of group I, claims 37-39 and 53-57. Affirmation of this election must be made by applicant in

Art Unit: 1763

replying to this Office action. Claims 40 and 58-61 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Oath/Declaration

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

Non-initialed and/or non-dated alterations have been made to the oath or declaration. See 37 CFR 1.52(c). See the non-initialed and non-dated alteration for the citizenship of the first inventor.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 1763

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 37 and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Lane et al., US 5,061,838.

Lane et al. shows the invention as claimed including a system comprising: an ion source having a toroidal plasma generator; an ion source aperture 610 aligned along a center line for the toroidal plasma generator; wherein the toroidal plasma generator includes a first core 600 and a second core (the core between core 600 and core 602 or core 602), the first core and the second core being aligned essentially along a center line of the toroidal plasma generator; see for example, fig. 7 and its description.

Claims 37, and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Martin et al., US 5,433,836.

Martin et al. shows the invention as claimed including a system comprising: an ion source having a toroidal plasma generator; an ion source aperture aligned along a center line for the toroidal plasma generator; wherein the toroidal plasma generator includes first and second cores 4, the first core and the second core being aligned essentially along a center line of the toroidal plasma generator; see, for example, fig. 1 and its description.

Claims 37-39 and 53 are rejected under 35 U.S.C. 102(e) as being anticipated by Smith et al., US 6,150,628.

Smith et al. shows the invention as claimed including a system comprising: an ion source having a toroidal plasma generator; an ion source aperture 204 aligned along a center line for the toroidal plasma generator; a first extraction electrode 206 disposed to accelerate ions from the ion source toward a second extraction electrode 206; wherein the toroidal plasma generator includes a first core 104 and a second core 106, the first core and the second core being aligned essentially along a center line of the toroidal plasma generator; an inlet 118 to receive a plasma precursor, the inlet in fluid communication with a first plasma current path and with a second plasma current path; a first conduit passing through the first core and a second conduit passing through the second core, wherein the first conduit is essentially collinear with the second conduit; see, for example, figs. 3 and 5 and their descriptions.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

Art Unit: 1763

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lane et al., US 5,061,838 in view of Smith et al., US 6,150,628.

Lane et al. is applied as above but does not expressly disclose a first extraction electrode disposed to accelerate ions from the ion source toward a second extraction electrode. Smith et al. disclose a system comprising a first extraction electrode 206 disposed to accelerate ions from the ion source toward a second extraction electrode 206, see for example, fig. 5 and its description. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Lane et al. as to further comprise the claimed first and second extraction electrodes in order to form an ion beam where the ions have a predetermined energy.

Claims 54-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lane et al., US 5,061,838 in view of Cann et al., U.S. 3,462,622, Kitamura et al., JP 62-126533 and Cox et al., U.S. Patent 6,418,874.

Lane et al. is applied as above but does not expressly disclose the claimed structure of claims 54-57. Cann et al. disclose an apparatus comprising: an outer shell 10 surrounding a first inner shell 21 housing a first toroidal transformer core 18; and a

Art Unit: 1763

second inner shell 20 housing a second toroidal transformer core 16; wherein the first toroidal transformer core and the second toroidal core are disposed along the center line of a plasma generator (see, for example, fig. 1 and its description). Additionally, Kitamura disclose an apparatus comprising: an outer shell 11 surrounding a first inner shell housing a first toroidal transformer core 12; and a second inner shell housing a second toroidal transformer core 13; wherein the first toroidal transformer core and the second toroidal core are disposed along the center line of a plasma generator (see, for example, figs. 1-2 and their descriptions). Furthermore, Cox et al. disclose an apparatus comprising: an outer shell 46 surrounding a first inner shell 48 housing a first toroidal transformer core 22; and a second inner shell 186 housing a second toroidal transformer core 184; wherein the first toroidal transformer core and the second toroidal core are disposed along the center line of a plasma generator (see, for example, figs. 1, 4A, 4D, 5, 7, 9C and their descriptions, for a complete description see the whole document). Therefore, in view of these disclosures, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Lane et al. as to further comprise the claimed outer, first and second shells because such structure is suitable for generating toroidal plasma.

Lane et al., Cann et al., Kitamura et al. and Cox et al. do not expressly disclose that the shape of the bottom portion of the first inner shell is circular in cross-section. However, the configuration of the claimed bottom portion of the first inner shell are a matter of choice which a person of ordinary skill in the art would have found obvious

Art Unit: 1763

absent persuasive evidence that the particular configuration of the claimed bottom portion of the first inner shell is significant.

Furthermore, note that Cox et al. discloses that the first inner shell is supported within the outer shell by a web allowing circulation of secondary plasma current around the first inner shell within the outer shell and wherein the web contains an electrical lead connected to a primary coil disposed to coupled electro-magnetic energy to the first torroidal transformer core. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Lane et al. by further comprising the claimed web structure because such configuration is suitable and known in the art to support the first inner shell within the outer shell and to coupled electromagnetic energy to the first torroidal transformer core.

Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Martin et al., US 5,433,836 in view of Smith et al., US 6,150,628.

Martin et al. is applied as above but does not expressly disclose a first extraction electrode disposed to accelerate ions from the ion source toward a second extraction electrode. Smith et al. disclose a system comprising a first extraction electrode 206 disposed to accelerate ions from the ion source toward a second extraction electrode 206, see for example, fig. 5 and its description. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Martin et al. as to further comprise the claimed first and second extraction electrodes in order to form an ion beam where the ions have a predetermined energy.

Claims 54-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin et al., US 5,433,836 in view of Cann et al., U.S. 3,462,622, Kitamura et al., JP 62-126533 and Cox et al., U.S. Patent 6,418,874.

Martin et al. is applied as above but does not expressly disclose the claimed structure of claims 54-57. Cann et al. disclose an apparatus comprising: an outer shell 10 surrounding a first inner shell 21 housing a first toroidal transformer core 18; and a second inner shell 20 housing a second toroidal transformer core 16; wherein the first toroidal transformer core and the second toroidal core are disposed along the center line of a plasma generator (see, for example, fig. 1 and its description). Additionally, Kitamura disclose an apparatus comprising: an outer shell 11 surrounding a first inner shell housing a first toroidal transformer core 12; and a second inner shell housing a second toroidal transformer core 13; wherein the first toroidal transformer core and the second toroidal core are disposed along the center line of a plasma generator (see, for example, figs. 1-2 and their descriptions). Furthermore, Cox et al. disclose an apparatus comprising: an outer shell 46 surrounding a first inner shell 48 housing a first toroidal transformer core 22; and a second inner shell 186 housing a second toroidal transformer core 184; wherein the first toroidal transformer core and the second toroidal core are disposed along the center line of a plasma generator (see, for example, figs. 1, 4A, 4D, 5, 7, 9C and their descriptions, for a complete description see the whole document). Therefore, in view of these disclosures, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the

Art Unit: 1763

apparatus of Martin et al. as to further comprise the claimed outer, first and second shells because such structure is suitable for generating toroidal plasma.

Martin et al., Cann et al., Kitamura et al. and Cox et al. do not expressly disclose that the shape of the bottom portion of the first inner shell is circular in cross-section. However, the configuration of the claimed bottom portion of the first inner shell are a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed bottom portion of the first inner shell is significant.

Furthermore, note that Cox et al. discloses that the first inner shell is supported within the outer shell by a web allowing circulation of secondary plasma current around the first inner shell within the outer shell and wherein the web contains an electrical lead connected to a primary coil disposed to coupled electro-magnetic energy to the first toroidal transformer core. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Martin et al. by further comprising the claimed web structure because such configuration is suitable and known in the art to support the first inner shell within the outer shell and to coupled electromagnetic energy to the first toroidal transformer core.

Claims 54-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al., US 6,150,628 in view of Cann et al., U.S. 3,462,622, Kitamura et al., JP 62-126533 and Cox et al., U.S. Patent 6,418,874.

Smith et al. is applied as above but does not expressly disclose the claimed structure of claims 54-57. Cann et al. disclose an apparatus comprising: an outer shell 10 surrounding a first inner shell 21 housing a first toroidal transformer core 18; and a second inner shell 20 housing a second toroidal transformer core 16; wherein the first toroidal transformer core and the second toroidal core are disposed along the center line of a plasma generator (see, for example, fig. 1 and its description). Additionally, Kitamura disclose an apparatus comprising: an outer shell 11 surrounding a first inner shell housing a first toroidal transformer core 12; and a second inner shell housing a second toroidal transformer core 13; wherein the first toroidal transformer core and the second toroidal core are disposed along the center line of a plasma generator (see, for example, figs. 1-2 and their descriptions). Furthermore, Cox et al. disclose an apparatus comprising: an outer shell 46 surrounding a first inner shell 48 housing a first toroidal transformer core 22; and a second inner shell 186 housing a second toroidal transformer core 184; wherein the first toroidal transformer core and the second toroidal core are disposed along the center line of a plasma generator (see, for example, figs. 1, 4A, 4D, 5, 7, 9C and their descriptions, for a complete description see the whole document). Therefore, in view of these disclosures, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus of Smith et al. as to further comprise the claimed outer, first and second shells because such structure is suitable for generating toroidal plasma.

Smith et al., Cann et al., Kitamura et al. and Cox et al. do not expressly disclose that the shape of the bottom portion of the first inner shell is circular in cross-section.

Art Unit: 1763

However, the configuration of the claimed bottom portion of the first inner shell are a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed bottom portion of the first inner shell is significant.

Furthermore, note that Cox et al. discloses that the first inner shell is supported within the outer shell by a web allowing circulation of secondary plasma current around the first inner shell within the outer shell and wherein the web contains an electrical lead connected to a primary coil disposed to coupled electro-magnetic energy to the first torroidal transformer core. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Smith et al. by further comprising the claimed web structure because such configuration is suitable and known in the art to support the first inner shell within the outer shell and to coupled electromagnetic energy to the first torroidal transformer core.

Conclusion

In order to avoid a notice of non-compliant amendment, applicant must provide a complete listing of all the claims in every response to an office action and/or any amendment made to the claims of this application. When there is any amendment to a claim, a claim listing of all claims ever presented in the case must be supplied in ascending numerical order. The list of the claims needs to include the proper status identifier for every claim. The status identifier must be indicated after its claim number


Art Unit: 1763

by using one of the following 7 status identifiers: (Original), (Currently amended), (Canceled), (Withdrawn), (Previously presented), (New), and (Not entered).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luz L. Alejandro whose telephone number is 571-272-1430. The examiner can normally be reached on Monday to Thursday from 7:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Luz L. Alejandro
Primary Examiner
Art Unit 1763

November 14, 2005